



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/721,609      | 11/24/2003  | Masao Nishiguchi     | 09792909-5726       | 5972             |

26263 7590 11/07/2008  
SONNENSCHN NATH & ROSENTHAL LLP  
P.O. BOX 061080  
WACKER DRIVE STATION, SEARS TOWER  
CHICAGO, IL 60606-1080

|          |
|----------|
| EXAMINER |
|----------|

LIN, JAMES

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1792

|           |               |
|-----------|---------------|
| MAIL DATE | DELIVERY MODE |
|-----------|---------------|

11/07/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/721,609 | <b>Applicant(s)</b><br>NISHIGUCHI ET AL. |  |
|                              | <b>Examiner</b><br>Jimmy Lin         | <b>Art Unit</b><br>1792                  |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/13/2008 has been entered.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites the limitation "said coating film" in line 7. There is insufficient antecedent basis for this limitation in the claim. The limitation will be interpreted to be the film formed by the coating liquid on the silicone blanket.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. (U.S. Publication No. 2002/0001026) in view of Ono et al. (JP 2000-289320), George et al. (U.S. Patent No. 4,487,122), Yamazaki et al. (U.S. Patent No. 6,420,200) and Schell (U.S. Patent No. 6,098,546).

Ishikawa teaches a method of producing an organic electroluminescence device comprising a pair of electrodes [0013]. Layers of organic material are disposed between the electrodes so as to cause luminescence between the electrodes [0013]. Ishikawa further teaches that in each ink application, a coating liquid (formed by dissolving an organic EL material with a solvent [0037]) is placed and filled into an intaglio plate 402 and a silicone rubber blanket 407 is pressed onto the plate 402 giving a blanket pressing depth to receive an ink pattern 408 (Fig. 4A). The ink pattern is then transferred as an ink pattern on a substrate ([0050]; Fig. 4B).

Ishikawa does not explicitly teach that the coating liquid is supplied and applied from the lower side. However, Ono teaches that ink 10 can be supplied and applied to the surface of the silicone blanket 9 from the lower side via a gravure roll provided with a gravure pattern (drawing 3). Also, letterpress (i.e. relief printing plate) may be used instead of the intaglio plate [0007]. Because Ono teaches that such methods were operable for forming a pattern on a silicone blanket, it would have been obvious to one of ordinary skill in the art at the time of the invention to have supplied and applied the intaglio printing process of Ono to print the EL solution onto silicone blanket of Ishikawa with a reasonable expectation of success.

Ono does not explicitly teach that the gravure roll has edges tapered in the axial direction at both ends. However, George teaches that it was well known to have used a gravure roll 14 having rounded edges (Fig. 1). By definition, a taper is a gradual reduction of size toward one end. A rounded edge of a cylinder tapers towards the axial direction of the cylinder. Because George teaches that such gravure rolls were operable, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a gravure roll having rounded edges as the particular gravure roll of Ono with a reasonable expectation of success.

Ono does not explicitly teach that the coating liquid is formed with substantially the same thickness throughout a pixel-forming area on the silicone blanket. However, Ishikawa teaches the need for the organic layer to have a uniform thickness [0015]. One of ordinary skill in the art would have recognized that a layer of uniform thickness on the silicone blanket would have produced a layer of uniform thickness on the electroluminescent substrate. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have formed a

uniform thickness of the coating liquid of Ishikawa on the silicone blanket with a reasonable expectation of success in order to have formed an organic layer having a uniform thickness on the electroluminescent substrate.

Ishikawa does not explicitly teach that the silicone blanket roll has non-pixel forming areas. However, Yamazaki teaches that it was well known in the EL art to have used a roll having non-pixel forming areas on the edges (Fig. 1C). Because Yamazaki teaches that such a method was operable in the art, it would have been obvious to one of ordinary skill in the art at the time of invention to have provided the silicone blanket of Ishikawa with non-pixel forming areas on the edge.

Ishikawa and Ono do not explicitly teach that the length of the gravure roll is substantially the same as the length of the silicone blanket. However, Schell teaches that rollers used in a single application can be substantially the same length. Because Schell teaches that such roller dimensions were operable in the art, it would have been obvious to one of ordinary skill in the art at the time of invention to have provided the gravure roll to be substantially the same length as the roll comprising the silicone blanket in the process of Ishikawa and Ono with a reasonable expectation of success.

As to the limitation of the tapered portion of the gravure roll being located over a non-pixel forming area, the rounded edges of the gravure roll would be located over the non-pixel forming areas of the silicone blanket.

6. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa '026 in view of Ono '320 and Yamazaki '200.

Ishikawa teaches a method of producing an organic electroluminescence device comprising a pair of electrodes [0013]. Layers of organic material are disposed between the electrodes so as to cause luminescence between the electrodes [0013]. Ishikawa further teaches that in each ink application, an ink (formed by dissolving an organic EL material with a solvent [0037]) is placed and filled into an intaglio plate 402 and a silicone rubber blanket 407 is pressed onto the plate 402 giving a blanket pressing depth to receive an ink pattern 408 (Fig. 4A). The ink pattern is then transferred as an ink pattern on a substrate ([0050]; Fig. 4B).

Ishikawa does not explicitly teach that ink is supplied onto the silicone blanket via a slit formed by two flat plates. However, Ono teaches that ink 10 can be supplied and applied to the surface of the silicone blanket 9 from the lower side via a die coater having a slit 15 (drawing 2). Also, letterpress (i.e. relief printing plate) may be used instead of the intaglio plate [0007]. Because Ono teaches that such methods were operable for forming a pattern on a silicone blanket, it would have been obvious to one of ordinary skill in the art at the time of the invention to have supplied and applied the intaglio printing process of Ono to print the EL layers of Ishikawa.

Ono does not explicitly teach that the die coater has slanted surfaces with a downward gradient from the central portion side toward the end portion sides of the rotational axis of the silicone blanket. However, rounded edges formed on the plates of the die coater would have reduced sharp edges. Handling of an object having sharp edges could potentially cause injury. Rounded edges on the plates would form a slanted surface with a downward gradient. It would have been obvious to one of ordinary skill in the art at the time of invention to have formed rounded edges on the plates of the die coater of Ono with a reasonable expectation of success. One would have been motivated to do so in order to have reduced potential injury when handling the die coater.

Ishikawa does not explicitly teach that the silicone blanket roll has non-pixel forming areas. However, Yamazaki teaches that it was well known in the EL art to have used a roll having non-pixel forming areas on the edges (Fig. 1C). Because Yamazaki teaches that such a method was operable in the art, it would have been obvious to one of ordinary skill in the art at the time of invention to have provided the silicone blanket of Ishikawa with non-pixel forming areas on the edge.

Ono does not explicitly teach that the slant surfaces are located over non-pixel forming areas of the silicone blanket. However, one of ordinary skill in the art would have recognized that the die coater of Ono should be at least a length such that all the pixel regions are coated onto the silicone blanket. A shorter length would result in the pixel regions being improperly formed on the EL substrate. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have provided the die coater of Ono to be about the sum of the lengths of the pixel areas with a reasonable expectation of success in order to properly coat the

EL substrate. The die coater would have at least some parts of it that is not used for coating, including the rounded edges. Thus, the rounded or slanted edges would be located over non-pixel forming areas of the silicone blanket.

Claim 4: Ono does not explicitly teach that the gaps between the left and right end portions of the flat plates of the die-coater are closed. However, the die-coater is only meant to extrude the coating liquid from the upper portions of the flat plates and not from the gaps on the left and right end portions. One of ordinary skill in the art would have recognized that closing off the gaps on the side portions would have further prevented the coating solution to leak out of the ends and to further control the extrusion from the die-coater. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have closed the gaps between the left and right end portions of the flat plates of the die-coater of Ono with a reasonable expectation of success. One would have been motivated to do so in order to have prevented coating solution from flowing out of gaps and to have further controlled the rate at which the coating solution coats the silicone blanket.

Ono does not explicitly teach that the spacing between the surface of the blanket and the top face of the die coater is uniform at a slit portion corresponding to an effective pixel forming area of the silicone blanket. However, Ishikawa does suggest the organic layer has uniform thickness [0015]. It is apparent that the spacing between the die coater and the silicone blanket controls the thickness of the layer and that a uniform spacing would result in a uniform layer thickness. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have had a uniform spacing between the die coater of Ono and the silicone blanket with a reasonable expectation of success in order to have formed an organic layer having a uniform thickness.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa '026 in view of Ono '320 as applied to claim 3 above, and further in view of Suga et al. (U.S. Patent No. 5,853,801).

Claim 5: Ono does not explicitly teach that the upper half portions of gaps between the left and right end portions of the flat plates are open and that the lower half portions of the gaps are closed. However, Suga teaches that it was well known to have used a die-coater 35 having

upper half portions of the gaps opened and the lower half portions of the gaps closed (Fig. 3). Because Suga teaches that such die-coater structures were operable, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a die-coater having a structure as taught in Suga in the coating method of Ono with a reasonable expectation of success.

### ***Response to Arguments***

8. Applicant's arguments filed 7/17/2008 have been fully considered but they are not persuasive.

Applicant argues on pg. 5 that Ishikawa fails to disclose the tapered portion of a gravure roll being located over a non-pixel forming area and the length of the gravure roll being substantially equal to the length of the silicon blanket. However, Yamazaki teaches that the use of a roll having non-pixel forming areas was well known, and Schell teaches that the use of rolls in a single application can have substantially the same lengths. The rounded edges as taught in George would have been located over the non-pixel areas. The teachings of Yamazaki and Schell have been added to the grounds of rejection in view of the amendments.

Applicant argues on pg. 6 that by providing the tapered portion of a gravure roll located over a non-pixel forming area and the length of the gravure roll being substantially equal to the length of a silicone blanket, the nonuniformity of the layer width of the contacted liquid portion is absorbed by the non-pixel forming area resulting in a small and uniform coating on the silicone blanket. However, the claims do not require that the tapered portions are used to coat the silicone blanket and, thus, the claims do not necessarily have the alleged advantages.

Applicant argues on pg. 6-7 that Ono fails to disclose a die coater with slanting ends located over a non-pixel forming area. However, one of ordinary skill in the art would have recognized that the die coater of Ono should be at least a length such that all the pixel regions are coated onto the silicone blanket. Otherwise the pixel regions would not be properly formed on the EL substrate. See above rejection for more details.

Applicant argues on pg. 7 that the nonuniformity of the layer width of the contacted liquid portion is absorbed by the non-pixel forming area resulting in a small and uniform coating film on the silicone blanket when using a slit having slant surfaces located over non-pixel



forming areas of the silicone blanket. However, the claims do not require that the slanted portions are used to coat the silicone blanket and, thus, the claims do not necessarily have the alleged advantages.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is (571)272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jimmy Lin/  
Examiner, Art Unit 1792

/Timothy H Meeks/  
Supervisory Patent Examiner, Art Unit  
1792